

Itinerary

Round Trip: United States → Netherlands → Norway → United States

Health Concerns Summary

The following may pose a risk or require preventive measures based on this itinerary. See the report sections below for details.

- Vaccine-Preventable Diseases: hepatitis A, hepatitis B, influenza, measles, mumps, rubella, meningococcal meningitis, rabies, tick-borne encephalitis
- Other Diseases: hantavirus, Lyme disease, travelers' diarrhea, West Nile virus

During the COVID-19 pandemic, routine vaccination of infants and young children aged ≤ 24 months is a top priority in the context of well-child care and should be prioritized when possible; vaccination of older children may still be conducted or postponed to a later date depending on community circumstances and resources.

COVID-19

Netherlands

Last updated: March 7, 2023

Fully vaccinated: 68.7%

Boosted or Additional Dose: 54.1%

Daily new cases: 576 (7-day rolling average)

Daily new cases / 100,000: 3.3

Daily new deaths: 0 (7-day rolling average)

14-Day Case Change: 20%

COVID-19 Travel Restrictions

Last change: February 24, 2023

Entry Restrictions

Nationals and residents of Netherlands may enter.

Foreigners may enter.

Asymptomatic Arrivals

No known mandatory quarantine measures exist.

COVID-19 Travel Recommendations

Shoreland Recommendation

All travelers should be up-to-date (i.e., boosted) on COVID-19 vaccinations prior to their trip. Persons who are at increased risk for severe illness from COVID-19 (even if up-to-date) should consider delaying nonessential travel to this country. All travelers should follow destination recommendations for masking and social distancing.

This recommendation is based on aggregate national data, available medical care, and access to testing.

Some cities or regions may have higher or lower risk.

Norway

Last updated: March 7, 2023

Fully vaccinated: 75.7%

Boosted or Additional Dose: 56.2%

Daily new cases: 50 (7-day rolling average)

Daily new cases / 100,000: 0.9

Daily new deaths: 5 (7-day rolling average)

Daily new deaths / 100,000: 0.1

14-Day Case Change: 28%

COVID-19 Travel Restrictions

Last change: February 10, 2023

Entry Restrictions

Nationals and residents of Norway may enter.

Foreigners may enter.

Asymptomatic Arrivals

No known mandatory quarantine measures exist.

COVID-19 Travel Recommendations

Shoreland Recommendation

No recommendation against travel to this country is in place. All travelers should be up-to-date (i.e., boosted) on COVID-19 vaccinations prior to their trip and follow destination recommendations for masking and social distancing.

Yellow Fever

Requirement Information (for entry, per WHO)

Is yellow fever vaccine an official entry requirement for this itinerary?

NO. An official certificate showing vaccination is not required for entry by any country on the entered itinerary sequence, but view full details and see "YF Requirement Table" if there are additional transited countries.

Visa application: Proof of YF vaccination may be required for certain visa applicants. Travelers should contact the appropriate embassy or consulate with questions and, if it is required for their visa, carry the YF certificate with their passport on the day of travel.

Yellow Fever Requirement Table for this Itinerary

The following values result in the "NO" requirement result shown above (based on a round trip with United States as the home country):

Yellow Fever Requirement Table				

Country	Transm. Risk	Required if Coming From	Applies to Ages	See Note
UNITED STATES	No	None	None	
NETHERLANDS	No	None	None	
NORWAY	No	None	None	

Recommendation Information (for health protection)

Is yellow fever vaccine a recommended protective measure for this itinerary?

NO. Vaccination is not necessary as a protective measure for any country on this itinerary.

Travel Vaccination Recommendations

Hepatitis A

Netherlands, Norway

Recommended for: men who have sex with men.

Influenza

Netherlands, Norway

Risk exists from November through April, with peak activity usually occurring from January through March, although off-season transmission can occur.

Recommended for: all travelers during transmission season due to demonstrated influenza risk in this group.

Vaccination Considerations

Netherlands, Norway

Travelers not already immunized with the currently available vaccine formulation should be vaccinated. Travelers immunized with the current formulation more than 6 months earlier should consider revaccination because immunity may have declined. Consider baloxavir or oseltamivir as standby therapy, especially for those who are at high risk for complications from influenza or inadequately vaccinated.

Hepatitis B

Netherlands, Norway

Recommended for: all health care workers; travelers with possible contact with contaminated needles (e.g., from acupuncture, tattooing, or injection-drug use) or possible sexual contact with a new partner during the stay.

Travelers should observe safer-sex practices and blood/bodily fluid precautions.

Measles, mumps, rubella

Netherlands, Norway

Due to recurring regional outbreaks, immunity is important for travel to this destination. Vaccine is indicated for those born in 1957 or later (1970 or later in Canada and UK; 1966 or later in Australia) without evidence of immunity or of 2 countable doses of live vaccine at any time during their lives. Also indicated for those born before 1970 (in Canada) without evidence of immunity or previous vaccination with 1 countable dose of measles-containing vaccine.

Rabies

Netherlands

Preexposure vaccination:

Risk of lyssavirus from bats exists and is presumed to have widespread distribution. Rabies is not present in canines or other mammals.

Recommended for: all travelers likely to have contact with bats.

Postexposure prophylaxis considerations:

Bat bites or scratches should be taken seriously, and postexposure prophylaxis should be sought even by those already vaccinated.

Norway

Preexposure vaccination:

Risk of lyssavirus from bats exists and is presumed to have widespread distribution. Fox rabies exists in remote Svalbard. Rabies is not present in canines or other mammals.

Recommended for: animal workers (such as veterinarians and wildlife professionals) traveling to Svalbard; all travelers likely to have contact with bats.

Fox and bat bites or scratches should be taken seriously, and postexposure prophylaxis should be sought even by those already vaccinated.

Meningococcal meningitis

Netherlands

Meningococcal vaccination is routine for children in this country.

Recommended for all long-stay children aged ≥ 14 months (according to destination dosing regimens): *quadrivalent meningococcal conjugate vaccine (MenACWY) prior to departure (if not previously given)*.

Tick-borne encephalitis

Netherlands

Low risk exists in Utrecht, Overijssel, and Gelderland provinces. Transmission occurs from April through October.

Consider for prolonged and short stays: expatriates and travelers who anticipate extensive hiking, camping, or other outdoor activities in forested risk areas.

Tick precautions are recommended.

Norway

Low risk exists in southern and western coastal areas in Agder, More og Romsdal, Nordland, Trondelag, and Vestfold og Telemark counties. Transmission occurs from May through October.

Recommended for prolonged and short stays: all expatriates and travelers who anticipate hiking, camping, or other outdoor activities in forested risk areas.

Tick precautions are recommended.

Routine Vaccination Recommendations (adults only)

Tetanus, diphtheria, pertussis

Due to increasingly frequent pertussis outbreaks worldwide, all travelers should receive Tdap vaccine every 10 years, assuming they previously received an adequate primary series. Those who received Td or TT for their most recent booster should receive an immediate dose of Tdap, regardless of the interval since the last tetanus dose.

Pneumococcal

Recommended for adults aged ≥ 65 years and all adults with chronic disease or immunocompromising conditions.

Varicella

Indicated for all persons born outside the US or born in the US in or after 1980, except for persons with an adequate vaccination history (2 lifetime doses), reliable evidence of previous infection, or laboratory confirmation of immunity.

Malaria

No malaria present.

Travelers' Diarrhea

Netherlands, Norway

Minimal risk (comparable to that in other industrialized countries) exists throughout the country. Community sanitation is generally good, and health concerns related to food and beverages are minimal.

Current Health Bulletins

Influenza

Netherlands, Norway

Seasonal Influenza

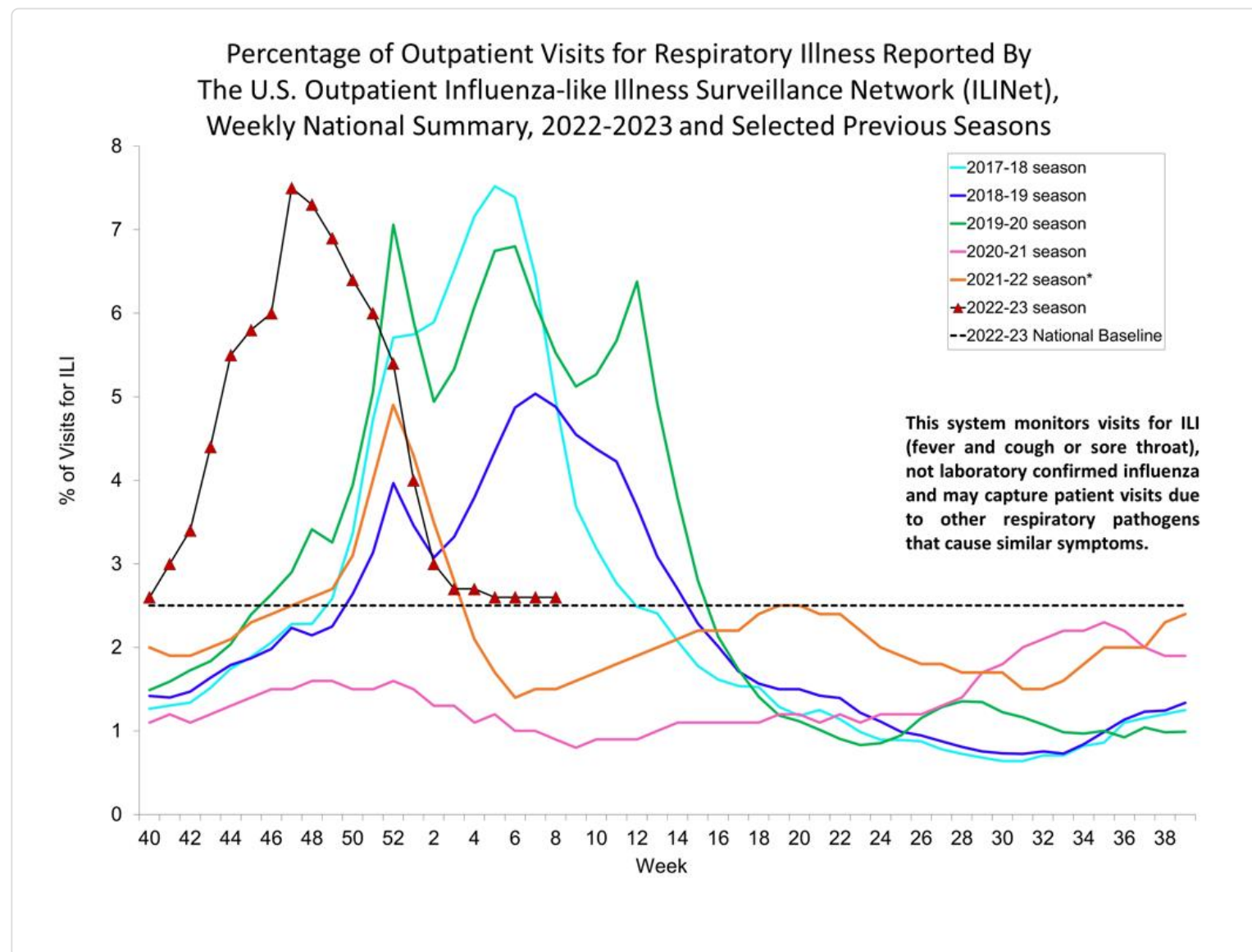
Updated Mar 6, 2023 (Posted Oct 18, 2022)

As of epidemiological week (EW) 8 (February 19-25) in 2023, seasonal influenza activity has plateaued in the US and is decreasing in Canada and Europe, with early peaks during EW 47 (in 2022) in Canada and the US and during EW 52 in Europe.

- In the US, the proportion of outpatient visits for influenza-like illness (ILI) has plateaued for the past 5 weeks at 2.6%, but has remained above the national baseline set for the 2022-23 season (2.5%) for 21 consecutive weeks. The national ILI ratio is below the national average (4.5%) during EW 8 of the past 5 prepandemic influenza seasons (which consistently began between EW 45 and EW 51). Influenza A(H3N2), which typically results in more severe illness (especially in older adults), accounted for 74% of all isolates in the US. The remaining breakdown of all isolates was 25% influenza A(H1N1), less than 1% influenza B/Victoria, and 0% influenza B/Yamagata.
- In Canada, the proportion of outpatient visits for ILI has decreased for the past 13 weeks, to 0.8%, which is below the national average (2.3%) during EW 8 of the past 6 prepandemic influenza seasons; of all isolates, the virus breakdown was 92% influenza A(H3N2), 7% influenza A(H1N1), and 1% influenza B.
- In Europe, the number of influenza detections has decreased for the past week, to approximately 8,400 per week, which is below the average (approximately 14,100 detections) during EW 8 of the past 5 prepandemic influenza seasons. Of all isolates, the virus breakdown was 46% influenza A(H1N1), 38% influenza A(H3N2), and 16% influenza B.

Data show that the current vaccine formulations are well-matched to the circulating strains in North America and Europe and no significant neuraminidase inhibitor resistance has been detected in the US or Canada. Baloxivir (a polymerase inhibitor) resistance is being tracked in the US as well, with no significant resistance detected. During the Southern Hemisphere 2022 influenza season (April-September), ILI activity was above average, with influenza A(H3N2) as the predominant strain in all

regions; no indications of drug resistance were reported. For the 2022-23 season, patients with respiratory symptoms consistent with either influenza or COVID-19 should be tested for both, preferably with an available duplex SARS-CoV-2/influenza PCR test. All efforts should be made to complete influenza vaccination as soon as possible. COVID-19 vaccination, if indicated, should be administered simultaneously with influenza vaccine. For vaccine supply status and vaccination recommendations, see United States: 2022-23 Influenza Vaccine Supply and United States: 2022-23 Influenza Season Vaccine Recommendations.



Mpox

Netherlands, Norway

More than 86,200 Community-Based Mpox (Monkeypox) Cases | Global Weekly Cases Continue to Decrease

Updated Feb 23, 2023 (Posted May 23, 2022)

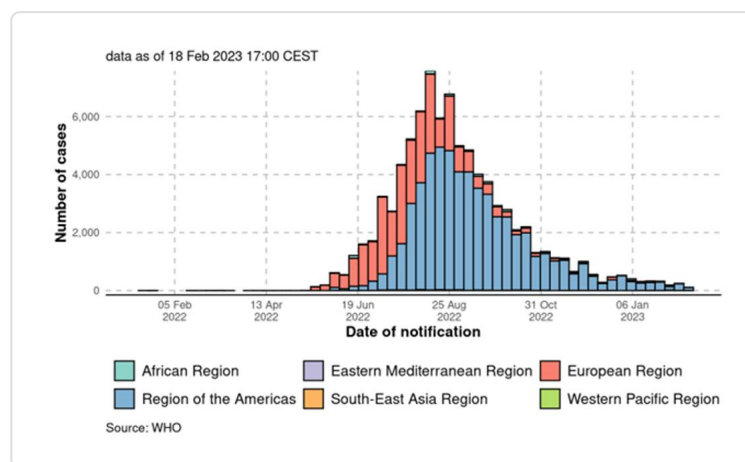
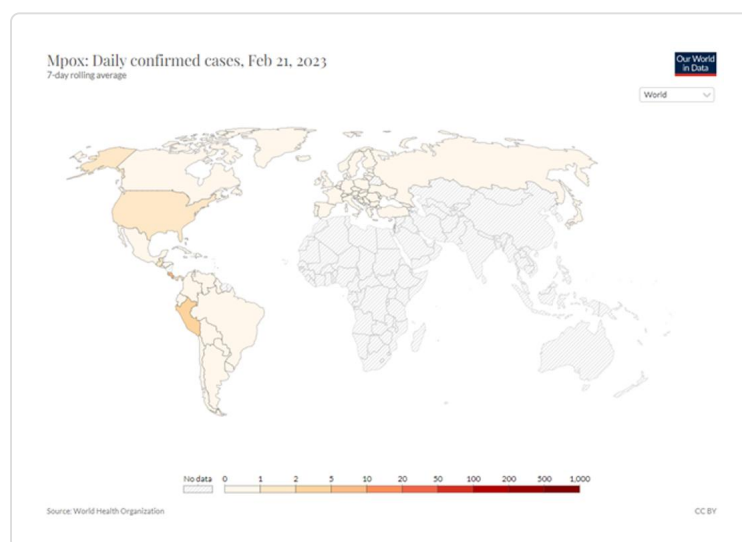
Epidemiology

The global mpox (formerly known as monkeypox) outbreak continues with significant under-identification and under-reporting of cases. On February 14, 2023, WHO maintained that this outbreak remains a Public Health Emergency of International Concern. WHO considers the overall global and regional risks to be moderate, except in the South-East Asia and the Western Pacific regions, where risk is considered to be low. No restrictions against travel have been recommended.

According to WHO, US CDC, European Centre for Disease Prevention and Control, and press sources citing local health authorities, approximately 25 laboratory-confirmed and suspected cases of mpox per day (7-day average) are being reported;

globally, weekly case numbers have plateaued over the past week.

Approximately 86,600 laboratory-confirmed and suspected cases (including 84 deaths) have been reported since May 13, 2022, in the US (> 30,200 cases and 32 deaths), Brazil (> 10,800 cases and 15 deaths), Spain (> 7,400 cases and 3 deaths), France (> 5,000 cases), Mexico (> 4,200 cases and 4 deaths), Colombia (> 4,100 cases), Peru (> 3,800 cases and 15 deaths), the UK (> 3,700 cases), Germany (> 3,700 cases), and 96 additional nonendemic countries; however, only 29 countries have reported a new local case within the past 4 weeks. Cases have mainly been reported in the European and Americas regions (98.0%). An additional 1,247 laboratory-confirmed cases (including 11 deaths), separate from the global outbreak, have been reported since January 2022 in 9



endemic African countries (mainly Democratic Republic of the Congo and Nigeria) and in 1 nonendemic African country (Benin; cases mostly imported from Nigeria). Case numbers by country can be retrieved from Our World in Data.

Community-based transmission has occurred in many countries among persons having close, sustained physical contact with persons who have mpox. Men who have sex with men (median age = 33 years) remain an important demographic in the outbreak, representing a majority of cases, and 48.0% of persons for whom HIV status is known have HIV. However, sporadic cases have been reported in household members, nonsexual contacts, heterosexual contacts, and children.

Travelers should avoid close contact with persons with symptoms consistent with mpox; observe hand and respiratory hygiene; reduce the number of sexual partners; reconsider sex with new partners; observe safer-sex practices; and abstain from sex when partners are ill (including any rash). Known case contacts should avoid sexual contact with others for 21 days, regardless of presence of symptoms. Vaccination is only recommended for known and presumed contacts identified through investigations. Vaccinated persons should continue to protect themselves by avoiding close, skin-to-skin, or intimate contact with someone with mpox due to limited data on vaccine effectiveness. Mpox should be considered in any traveler presenting with compatible illness within 21 days after potential exposure.

For more information, see *Mpox*.

Other Concerns

Marine hazards

Netherlands, Norway

Risk from sea urchins exists. Risk from weever fish exists. Travelers should seek out and heed posted warnings and refrain from bathing at unmarked, unpatrolled beaches.

Air pollution

Netherlands

Air quality may be variable throughout the year. Annual mean particulate matter concentrations are unhealthy for sensitive groups in select cities.

Amsterdam, Leiden, or Utrecht: When air quality worsens, travelers with lung disease or at the extremes of age should reduce prolonged or heavy outdoor exertion.

West Nile virus

Netherlands

Low risk exists and is limited to Gelderland and Utrecht provinces. Transmission occurs from May through November, with peak activity in August. Travelers with significant outdoor exposure in affected areas should observe insect precautions from dusk to dawn.

Hantavirus

Netherlands

Low risk of nephropathia epidemica (caused by Puumala virus) exists in North Brabant and Overijssel provinces. Negligible risk of nephropathia epidemica (caused by Puumala virus) exists throughout the rest of the country. Transmission occurs throughout the year, with peak activity from May through June. Travelers, especially campers, should avoid inadequately ventilated buildings and outdoor areas harboring rodent excreta, which may become aerosolized, and should camp only in designated areas.

Norway

Negligible risk of nephropathia epidemica (caused by Puumala virus) exists in rural areas throughout most of the country (including forested areas of Oslo), mainly in Innlandet, Nordland, Agder, Viken, and Vestfold og Telemark counties. Transmission occurs throughout the year, with highest activity from November through February. Travelers, especially campers, should avoid inadequately ventilated buildings and forested areas harboring rodent excreta, which may become aerosolized, and should camp only in designated areas.

Lyme disease

Netherlands

Significant risk exists in some or all forested areas throughout the country (including Amsterdam), especially in eastern and northern provinces and the along the southern border. Transmission occurs from March through November, with peak activity from June through July. Travelers should observe tick precautions.

Norway

Low risk exists and is limited to some or all forested areas in southern counties, mainly in Agder, More og Romsdal, Rogaland, Vestfold og Telemark, and Vestland. Transmission occurs from April through December, with peak activity in August. Travelers should observe tick precautions.

Additional Information by Country

Netherlands

Medical Summary

General Information

The Netherlands, the European portion of the Kingdom of the Netherlands, is an advanced economy classified as high income. Located in western Europe along the North Sea (east of Belgium and west of Germany), the climate is classified as humid temperate (no dry season).

Medical Care

A high level of medical care (comparable to that in other industrialized countries) is available throughout the country. One or more JCI accredited hospitals are present in Amsterdam and in many other major cities.

The national medical emergency number is 112.

Hyperbaric chambers for diving injuries are located in, but not limited to, the following cities: Amsterdam, Den Helder, Goes, Hoogeveen, and Rotterdam.

Upfront payment by cash or credit card, up to the total of all anticipated charges, is generally required by hospitals catering to foreigners prior to services or treatment. Upfront payment may be waived by hospitals that have existing cashless agreements with at least some major international insurance providers. Public hospitals may provide some services free to EHIC/GHIC health card holders and citizens of Australia. All hospitals are required to provide emergency stabilization without regard to ability to pay.

Consular Advice

The material below includes information from the US Department of State (DOS), the UK Foreign, Commonwealth & Development Office (FCO), Global Affairs Canada (GAC), and Australia's Department of Foreign Affairs and Trade (DFAT), as well as from additional open-source material. Standard safety precautions that apply to all international travel can be found in the Library article Safety and Security.

Terrorism Risk

Risk of attack by transnational terrorist groups exists throughout Europe. Targets may include domestic and international organizations and businesses; public places and events, including those frequented by tourists; and transportation systems.

In 2018, an attack occurred in Amsterdam in an area frequented by tourists.

Crime

Negligible risk of violent crime exists throughout the country.

High risk of petty crime exists in large cities and especially in central Amsterdam, particularly on or near public transportation (especially in Central Station and on trains to and from Schiphol Airport) and in other areas frequented by tourists, including restaurants and coffee shops.

Theft of valuables from unattended accommodations is common.

Scams involving false identity (such as criminals posing as police officers) have been reported.

Risk exists of robberies and/or assaults occurring after consuming intentionally drugged food or drink; tourists are frequently targeted.

Civil Unrest

Protests and demonstrations may infrequently occur and have the potential to turn violent without warning. Bystanders are at risk of harm from violence or from the response by authorities. Disruption to transportation, free movement, or the ability to carry out daily activities may occur.

Water Safety

Rent water sports equipment from reputable operators. Scuba dive only with personnel certified by PADI or NAUI and use equipment only from PADI- or NAUI-certified dive operators.

Transportation Safety

Low risk of traffic-related injury or death exists. The road traffic death rate is less than 7 per 100,000 population, the lowest risk category.

Speed laws are poorly enforced.

Airline Safety

The US Federal Aviation Administration has determined that the civil aviation authority of this country oversees its air carriers in accordance with minimum international safety standards.

Natural Disasters

Seasonal flooding occurs, especially in coastal areas.

Consular Information

Selected Embassies or Consulates in the Netherlands

- United States: [+31] 70-310-2209; nl.usembassy.gov
- Canada: [+31] 70-311-1600; www.netherlands.gc.ca
- United Kingdom: [+31] 070-4270-427; www.gov.uk/world/organisations/british-embassy-the-hague
- Australia: [+31] 70-310-8200; netherlands.embassy.gov.au

Netherlands' Embassies or Consulates in Selected Countries

- In the U.S.: nlintheusa.com
- In Canada: www.netherlandsandyou.nl/your-country-and-the-netherlands/canada
- In the U.K.: www.netherlandsworldwide.nl/countries/united-kingdom
- In Australia: www.nederlandwereldwijd.nl/landen/australie

Visa/HIV Testing

HIV testing is not required to obtain a tourist, work, or residence visa.

Norway

Medical Summary

General Information

Norway is an advanced economy classified as high income. Located in northern Europe along the North Atlantic Ocean (west of Sweden), the climate is classified as predominantly humid temperate (no dry season).

Medical Care

A high level of medical care (comparable to that in other industrialized countries) is available throughout the country.

For a public ambulance anywhere in the country, call 113.

Hyperbaric chambers for diving injuries are located in Bergen, Laksevag, Oslo, and Tromso.

Upfront payment by cash or credit card, up to the total of all anticipated charges, is generally required by hospitals catering to foreigners prior to services or treatment. Upfront payment may be waived by hospitals that have existing cashless agreements with at least some major international insurance providers. Public hospitals may provide some services free to EHIC/GHIC health card holders and citizens of Australia. All hospitals are required to provide emergency stabilization without regard to ability to pay.

Consular Advice

The material below includes information from the US Department of State (DOS), the UK Foreign, Commonwealth & Development Office (FCO), Global Affairs Canada (GAC), and Australia's Department of Foreign Affairs and Trade (DFAT), as

well as from additional open-source material. Standard safety precautions that apply to all international travel can be found in the Library article Safety and Security.

Terrorism Risk

Risk of attack by transnational terrorist groups exists throughout Europe. Targets may include domestic and international organizations and businesses; public places and events, including those frequented by tourists; and transportation systems.

Crime

Low risk of violent crime (sexual assault and gang-related violence) exists throughout the country, mainly in eastern areas of Oslo.

Low risk of petty crime exists in areas frequented by tourists, mainly in Oslo (including Oslo Central Station), especially from May to September.

Water Safety

Rent water sports equipment from reputable operators. Scuba dive only with personnel certified by PADI or NAUI, and use equipment only from PADI- or NAUI-certified dive operators.

Transportation Safety

Low risk of traffic-related injury or death exists. The road traffic death rate is less than 7 per 100,000 population, the lowest risk category.

Airline Safety

The US Federal Aviation Administration has determined that the civil aviation authority of this country oversees its air carriers in accordance with minimum international safety standards.

Natural Disasters

Winter storms frequently occur. Avalanches, floods, mudslides, and landslides may occur, especially in mountainous areas.

Extreme cold (which can lead to cold-related injury) occurs.

Consular Information

Selected Embassies or Consulates in Norway

- United States: [+47] 21-30-85-40; no.usembassy.gov
- Canada: [+47] 22-99-53-00; www.norway.gc.ca
- United Kingdom: [+47] 23-13-27-00; www.gov.uk/world/organisations/british-embassy-oslo
- Australia: Australia does not have an embassy or consulate in Norway.

Norway's Embassies or Consulates in Selected Countries

- In the U.S.: www.norway.no/en/usa
- In Canada: www.norway.no/canada
- In the U.K.: www.norway.no/en/uk
- In Australia: www.norway.no/en/australia

Visa/HIV Testing

HIV testing is not required to obtain a tourist, work, or residence visa.

Basic Protective Measures

Many travel-related health and safety problems can be significantly reduced through appropriate behavior by the traveler. Risk can be minimized by adherence to the following measures.

Health

Insect Precautions

- Wear clothing that covers as much skin as practicable.
- Apply a repellent to all exposed, nonsensitive areas of the body. Frequent application ensures continuous protection. When both an insect repellent and sunscreen are used, apply the sunscreen first, let it dry completely, then apply the repellent. Very limited data suggest that DEET-containing repellents reduce a sunscreen's stated SPF UVB protection by as much as one-third, requiring more frequent sunscreen application. Sunscreens do not appear to reduce the efficacy of insect repellents (DEET or picaridin) but may increase the absorption of DEET (but not picaridin) through the skin, even when the sunscreen is applied first as recommended. Never use a combination sunscreen/insect repellent product (e.g., Avon Skin Soft Bug Guard, Bull Frog Mosquito Coast Sunscreen with Insect Repellent, or Sunsect).
- Use a repellent containing DEET (N,N-diethyl-meta-toluamide; 30%–35% concentration) or, alternatively, a repellent containing picaridin (20% concentration or greater for tropical destinations; also known as icaridin). Picaridin, unlike DEET, has a pleasant smell and does not dissolve plastic materials.
- Determine the time of day and type of insects to be avoided when choosing when to apply repellent.
 - *Applicable to malaria risk countries:* Mosquitoes that transmit malaria (*Anopheles* spp.) are generally night biters with activity between dusk and dawn.
 - *Applicable to West Nile virus and Japanese encephalitis risk countries:* Mosquitoes that transmit these diseases (*Culex* spp.) are generally night biters but have peak activity at dusk and again at dawn.
 - *Applicable to chikungunya, dengue, yellow fever, or Zika risk countries:* Mosquitoes that transmit these diseases (*Aedes* spp.) can bite throughout the day but have peak activity during early morning and late afternoon and evening.
 - *Applicable to leishmaniasis risk countries:* Sandflies that transmit leishmaniasis are active from dusk to dawn, but in forests and dark rooms they may bite during the daytime if disturbed.
 - *Applicable to African trypanosomiasis risk countries:* DEET is generally ineffective. Wear light-colored (not blue), heavyweight clothing in risk areas.
- Treat outer clothing, boots, tents, and sleeping bag liners with permethrin (or other pyrethroid) when traveling in an area of very high risk for mosquito-borne or tick-borne diseases.
- Sleep under a permethrin-impregnated bed net when at high risk of malaria or Japanese encephalitis if not sleeping in a sealed, air-conditioned room. Regularly check the net for rips and tears and keep it tucked in around the bed at all times. Ensure that all open windows have insect screens.
- Use spatial repellent products in the form of an aerosol spray, vaporizer device, or smoldering coil. These products usually contain a pyrethroid (e.g., metofluthrin or allethrin).
- Perform a full body check for ticks at least once a day when staying in areas where tick-borne disease is a risk.

Blood-Borne and Sexually Transmitted Infections (STIs)

- Use condoms in all sexual encounters; unprotected casual sex, whether with local residents or with fellow travelers, always poses a high risk.
- Understand that inhibitions are diminished when traveling away from the social constraints of home; excessive use of alcohol and recreational drugs can influence behavior and encourage unintentional risk exposure.

Rabies

- Never assume that an animal or bat is free of rabies.
- Avoid entering caves due to the possibility of exposure to bats and their droppings.
- Do not handle or feed pets, unknown animals (especially dogs and monkeys), or bats. Children should be closely supervised.
- Clean any bite, scratch, or lick on broken skin immediately with soapy water; seek postexposure prophylaxis for rabies (even if rabies vaccine was completed before exposure) or herpes B virus (transmitted by monkey bites).
- Minimize running or bicycling in high-risk rabies areas to avoid provoking domestic animals.

Pretravel Checklist

- Have predeparture medical and dental exams.
- Express any concerns about jet lag, altitude illness, or motion sickness to a travel health provider, who may suggest suitable medications.
- Pack adequate supplies of necessary medications and ensure that they are securely packaged in their original, labeled prescription containers and carried in multiple places. Travelers should have a letter from a physician stating the medical condition and the medications and/or medical supplies being carried.
 - If traveling with a controlled drug for personal use, review medication regulations on the International Narcotics Control Board website (<http://www.incb.org/incb/en/travellers/index.html>) as well as official government sites. Rules on amphetamine-based medications used for attention-deficit/hyperactive disorders should always be checked before travel.
- Prepare a compact medical kit that includes the following: simple first-aid supplies (such as bandages, gauze, hemostatic gauze, antiseptic, antibiotic ointment, butterfly bandages, skin glue, and splinter forceps), a thermometer, antipyretic agents, antifungal creams, cough and cold remedies, antacids, hydrocortisone cream, and blister pads.
- Pack a spare pair of eyeglasses or contact lenses and adequate cleansing solution, if applicable.
- Pack sunglasses, wide-brimmed hats, sunscreen (SPF 30+), and lip protection to avoid sun exposure problems during travel.
- Arrange adequate medical and evacuation insurance when traveling, even for short trips. Ensure all preexisting medical issues are declared to the insurer so that noncovered conditions are ascertained in advance. Have the insurer's contact details recorded and accessible at all times during travel.
- Carry a list of contact information for hometown medical providers, health insurance carriers, and a medical assistance company, keeping it accessible at all times.
- Carry a list of medical conditions, allergies, and medications (with dosages).
- Carry a copy of a recent electrocardiogram on a portable USB drive or ensure that it can be accessed on the internet (for those with cardiac disease).

Safety

Safety and Crime Avoidance

- Use caution in tourist sites and crowded areas, on or near public transportation, and avoid marginal areas of cities.
- Be wary of any stranger who initiates conversation or physical contact in any way, no matter how accidental it may seem.
- Avoid using ATMs at night.
- Minimize visible signs of wealth in dress or jewelry.
- Give up valuables if confronted. Money and passports can be replaced; life cannot.
- Register foreign trip and residence information with the Department of State at travelregistration.state.gov (U.S. citizens only), which facilitates communication and assistance in case of an emergency.

Safety in the Hotel

- Keep hotel doors locked at all times.
- Seek out and read fire safety instructions in the hotel room. Become familiar with escape routes upon arrival.
- Keep valuables in the room safe or the hotel safe.

Other Health Information

Food and Beverage Precautions

Traveler Summary

Key Points

- Food- and waterborne illnesses are the most common causes of trip interruption.
- Diseases transmitted by improperly prepared or stored edibles may be due to viruses, bacteria, or parasites.

- Travelers most at risk are those who eat street food, eat at buffets, or drink water (including ice) or other beverages from a questionable source.
- Food- and waterborne illnesses can lead to diarrhea that ranges from mild/nuisance/minimal impact on plans to severe/necessitating change to itinerary.
- Preventive measures include observing hand hygiene (frequent, thorough handwashing), consuming foods that are fully cooked and served hot, eating thick-rinded peelable fruits, avoiding street food and buffets, avoiding unpasteurized dairy, and drinking only bottled or treated water and other beverages. Beverages should be served in sealed containers.

Introduction

Guaranteeing the safety of food and beverages is difficult if not impossible when traveling, especially in developing countries. Without strict public health standards, bacteria or parasites in food or water may go undetected and cause illness such as travelers' diarrhea (TD).

However, travelers can continue to enjoy local foods, which is part of the pleasure of international travel. Although some evidence exists to suggest that *where* food is eaten is more important than what food is eaten, observing food and water precautions helps decrease the number of organisms ingested and the severity of TD if contracted. These precautions also help reduce the risk of other infections, such as dysentery, hepatitis A and E, giardiasis, typhoid, and paratyphoid. No reliable evidence exists for SARS-CoV-2 (cause of COVID-19) transmission from food or food packaging, despite reports to the contrary from China.

In developed countries, clean drinking water is available from the tap, and breakdowns in the system are rare. Developing countries, however, don't always have the resources needed to ensure a pure water supply; consequently, tap water is not safe to drink. Even if the local population can drink the water, travelers should not assume that they can. Residents have built up some immunity to organisms in the water, but visitors have not. As a result, tap water can make travelers sick.

Although it may not be possible to avoid diarrhea in certain high-risk destinations, even with the strictest adherence to preventive measures, the risk can be minimized by following the guidelines below when traveling through areas with less-than-adequate sanitation or with water sources of unknown purity.

Food Precautions

Wash hands with soap and water for 20 seconds, especially before eating, after using the bathroom, and after touching potentially contaminated surfaces, regardless of the destination. If soap is not available, use disposable antiseptic wipes or an alcohol-based hand sanitizer containing at least 60% alcohol. Choose establishments that are known to cater to foreigners or that are specifically known by other foreigners to be safe. Foods that are safer to eat include breads, tortillas, crackers, biscuits, and other baked goods, as well as canned foods and fruits, nuts, and vegetables with thick skins, peels, or shells that can be removed. Food should be well-cooked and served steaming hot.

Avoid food from street vendors or market stalls. Avoid leafy or uncooked vegetables and salads. Some organisms in soil and water are not destroyed by normal cleaning methods. Beware of garnishes, which are typically uncooked vegetables, fruits, or herbs.

Avoid undercooked, raw, or cold meat, seafood, and fish, including large carnivorous fish (especially from reef areas because many contain concentrated toxins). See *Seafood Poisoning*.

Avoid unpasteurized dairy products such as cheese, yogurt, and milk. Be particularly wary of ice cream and other frozen confections that may have been made or stored in contaminated containers. Also avoid creamy desserts, custards, or sauces that may not have been adequately refrigerated, as well as cold sauces such as mayonnaise, salad dressing, chutneys, or salsas, which are usually raw and made by hand.

Avoid buffet foods such as lasagna, casseroles, and quiches, unless they are known to be fresh (not reheated) and have been kept steaming hot. Avoid buffets with no food covers or fly controls.

Continue to breastfeed infants because breastmilk is the safest food source for such infants.

Beverage Precautions

Use sealed bottled water or chemically treated, filtered, or boiled water for drinking and for brushing teeth. Drink beverages made only with boiled water whenever possible (such as hot tea and coffee). Water brought to a boil (at or near sea level) is considered adequately disinfected but continue to boil vigorously for 1 minute for a margin of safety.

Drink canned, boxed, or commercially bottled carbonated water and drinks. International brands are safest. Beware of unsealed containers that may have been refilled. Beer and wine are safe to drink; however, alcohol added to other beverages does not render the beverages safe.

Purify water (see *Treating Water*) if one of these options is not available. Decide which method to use for water purification and bring along the appropriate equipment or chemicals. Carry safe water if going out for the day in an area where availability of safe water is not assured. Do not assume that water is safe because it is chlorinated. Chlorination does not destroy all the organisms that can cause illness.

Avoid tap water or anything mixed with tap water and do not rinse toothbrushes in tap water. Do not drink fruit juice unless it comes directly from a sealed container; otherwise, it may have been diluted with tap water. Do not drink from wet cans or bottles because the water on them may be contaminated. Dry wet cans/bottles before opening and clean all surfaces that will have contact with the mouth. Do not use ice unless it is made from boiled, bottled, or purified water. Freezing does not kill the organisms that cause diarrhea.

If formula is used for feeding infants, prepare with boiled or distilled water and use sterilized containers.

Insect Precautions

Traveler Summary

Key Points

- Significant and potentially life-threatening illnesses can be transmitted by insect and other biting vectors.
- Wear protective clothing (e.g., long sleeves, trousers, and socks) as a first line of defense.
- Apply an EPA-approved insect repellent (e.g., DEET 30%–35% concentration or Picaridin 20% concentration) on all exposed skin. These repellents have the most data supporting effectiveness; avoid other repellents (including botanicals) for tropical diseases. Repellent should be applied to the face using hands (not spray), avoiding mouth and eye areas.
- Treat clothing with permethrin by fully saturating the fabric and allowing it to air dry; this will increase the protective level of clothing by repelling flying insects (mosquitoes, flies) and killing crawling arthropods (ticks, mites, fleas).
- Reapply repellent frequently and after strenuous activity or swimming.
- Avoid combination repellent-sunscreen products because the effectiveness of the sunscreen may be diminished.
- Apply sunscreen before repellent, allowing the sunscreen to fully dry. Sunscreen may increase absorption of DEET.
- Know what insects are prevalent, what time of day they are active, and where they can be found. In some locations, precautions may need to be employed 24 hours/day due to multiple threats.
- Do a full body check for ticks during and after outdoor activity and at the end of each day; promptly remove any ticks found.
- Sleep in rooms with intact screens, bed nets, or air conditioning.
- Use an insecticide spray, vaporizer, or coil to kill stray insects in sleeping quarters.

Introduction

In the tropics, insects and other biting vectors can transmit significant illnesses (such as chikungunya, dengue, malaria, rickettsial disease, yellow fever, and Zika), which may be potentially life threatening. These diseases are preventable with the use of personal protective measures. In some cases (e.g., malaria or yellow fever), a preventive drug or vaccine is also available, but these should be used with the personal protective measures discussed below.

Personal Protective Measures

Travelers should:

- Wear clothing that covers as much skin as practicable, especially when walking through brushy vegetation.

- Wear long, light-colored pants tucked into socks when traveling in an area with risk for tick-borne diseases; light-colored clothing makes it easier to spot ticks.
- Apply a repellent to all exposed, nonsensitive areas of the body. Frequent application ensures continuous protection. When both an insect repellent and sunscreen are used, apply the sunscreen first, letting it dry completely, then apply the repellent. Very limited data suggest that DEET-containing repellents reduce a sunscreen's stated SPF UVB protection by as much as one-third, requiring more frequent sunscreen application. Sunscreens do not appear to reduce the efficacy of insect repellents (DEET or picaridin) but may increase the absorption of DEET (but not picaridin) through the skin, even when the sunscreen is applied first as recommended. Avoid use of a combination sunscreen/insect repellent product (e.g., Avon Skin Soft Bug Guard, Bull Frog Mosquito Coast Sunscreen with Insect Repellent, or Sunsect).
- Use a repellent containing DEET (N,N-diethyl-meta-toluamide; 30%–35% concentration) or, alternatively, a repellent containing picaridin (20% concentration or greater for tropical destinations; also known as icaridin). Picaridin, unlike DEET, has a pleasant smell and does not dissolve plastic materials.
- Determine the time of day and type of insects to be avoided when choosing when to apply repellent.
 - *Applicable to malaria risk countries:* Mosquitoes that transmit malaria (*Anopheles* spp.) are generally night biters with activity between dusk and dawn.
 - *Applicable to West Nile virus and Japanese encephalitis risk countries:* Mosquitoes that transmit these diseases (*Culex* spp.) are generally night biters but have peak activity at dusk and again at dawn.
 - *Applicable to chikungunya, dengue, yellow fever, or Zika risk countries:* Mosquitoes that transmit these diseases (*Aedes* spp.) can bite throughout the day but have peak activity in the early morning, late afternoon, and evening.
 - *Applicable to leishmaniasis risk countries:* Sand flies that transmit leishmaniasis are active from dusk to dawn, but in forests and dark rooms they may bite in the daytime if disturbed.
 - *Applicable to African trypanosomiasis risk countries:* Tsetse flies can bite through lightweight clothing. DEET and permethrin are generally ineffective. Wear light-colored (not blue), heavyweight clothing in risk areas.
- Treat outer clothing, boots, tents, and sleeping bag liners with permethrin (or other pyrethroid) when traveling in an area of very high risk for mosquito-borne or tick-borne diseases.
- Sleep under a permethrin-impregnated bed net when at high risk of malaria or Japanese encephalitis if not sleeping in a sealed, air-conditioned room. Regularly check the net for rips and tears and keep it tucked in around the bed at all times. Ensure that all open windows have insect screens.
- Use spatial repellent products in the form of an aerosol spray, vaporizer device, or smoldering coil. These products usually contain a pyrethroid (e.g., metofluthrin or allethrin).
- Perform a full body check (especially the neck, scalp, groin, armpits, and navel) for adult ticks and nymphs during and after outdoor activity and at the end of each day when staying in an area with risk for tick-borne diseases. Remove attached ticks immediately, preferably with forceps or with fine-tipped tweezers, grasping the tick as close to the skin surface as possible and pulling directly upward, steadily, without twisting or jerking. Clean the site with an alcohol swab or soap and water. Avoid handling the tick with bare hands.

Insect Repellents and Insecticide-Treated Clothing

The most effective repellents contain DEET or picaridin. Picaridin is considered to have comparable efficacy and duration of protection to DEET at the same concentration. Both compounds have been shown to be effective (under actual field conditions in tropical countries) against both *Anopheles* and *Aedes aegypti* mosquitoes.

Besides DEET and picaridin, the US Environmental Protection Agency (EPA) has registered several other active ingredients as repellents, but fewer studies have been conducted (compared to DEET and picaridin) to examine their efficacy and data on 2-undecanone are limited compared to other second-line repellents. The newest active ingredient, nootkatone (developed by US CDC), is registered for use in insecticides and insect repellents; however, the time for development of new products containing nootkatone and subsequent EPA review mean commercial availability of products is not expected immediately and no products were available as of early 2022. Data suggest 85% to 90% efficacy in repelling mosquitoes (*Aedes*, *Culex*, and *Anopheles* species) compared to DEET (20%) and superior efficacy at repelling ticks compared to DEET, picaridin, and IR3535. In addition to repelling ticks and mosquitoes, nootkatone also kills them. Nootkatone is found mainly in grapefruit skin and is already approved as a safe flavoring and fragrance agent in the US and worldwide.

Common commercially available insect repellent brands for each active ingredient include:

- DEET: Off! Deep Woods Sportsmen, 3M Ultrathon lotion, Repel, Sawyer Ultra 30 lotion, Ben's Eco Spray, Cutter Backwoods, Sunsect

- Picaridin: Cutter Advanced, Natrapel, and Sawyer's Picaridin Insect Repellent
- IR3535 (chemical name: 3-[*N*-butyl-*N*-acetyl]-aminopropionic acid, ethyl ester): Bullseye, Avon's Skin So Soft Bug Guard Plus Expedition, and Coleman's SkinSmart
- Oil of lemon eucalyptus (OLE) or PMD (chemical name: para-menthane-3,8-diol), the synthesized version of OLE: Cutter Lemon Eucalyptus, Off! Botanicals, Repel
- 2-undecanone (chemical name: methyl nonyl ketone): BioUD

The following repellent products are approved for use by the US Department of Defense.

- DEET: Ultrathon lotion (34%), Sawyer Ultra 30 lotion (30%), Cutter Backwoods (25%), and Sunsect (20% plus SPF 15 sunscreen)
- Picaridin: Natrapel (20%)
- IR3535: Bullseye (20%)
- Sulfur: Chigg-Away (10% sulfur and 5% benzocaine) for chiggers

An increasing number of botanical repellents containing eucalyptus, citronella, soybean oil, geranium oil, and castor oil are marketed. Limited data suggest that these may be adequate alternatives to DEET or picaridin.

Use of brand names is for informational purposes only and does not constitute preference for one brand over another.

Duration of protection: With both DEET and picaridin, increasing repellent concentration increases the duration of effectiveness. With DEET, the effect on duration of protection plateaus at about 50% concentration. Products with less than about 20% picaridin or DEET have a relatively short duration of protection. The optimal concentration of DEET is considered to be 30% to 35%. When used by tropical travelers in appropriate concentrations (i.e., 20% or greater), DEET and picaridin should be applied every 4 to 6 hours. Ultrathon (34% DEET) and Sawyer's Ultra 30 (30% DEET) controlled-release lotion formulation provides protection for 10 to 12 hours.

Use in children: Both DEET and picaridin-containing repellents can be used in children 2 months and older; the maximum concentrations that should be used are 30% for DEET and 10% for picaridin. IR3535 and 2-undecanone can be used in children 2 months and older, and OLE can be used in children 3 years and older.

Use in pregnancy and breastfeeding: Pregnant women and their babies are at special risk from the consequences of vector-borne diseases. Clothing should cover as much skin as practicable, leaving only extremities, head, and neck exposed. DEET, picaridin, IR3535, OLE, and 2-undecanone can be used by pregnant and breastfeeding women but should not be applied directly to the nipple area to prevent ingestion by breastfeeding children. DEET has been shown in 1 short-term study to be safe in the second and third trimesters of pregnancy when used at concentrations of 20% or lower; however, the use of DEET in the first trimester has not been well studied. Although no evidence exists that the use of DEET or picaridin by pregnant or breastfeeding women poses a health hazard to unborn babies or children who are breastfeeding, no long-term follow-up studies are available.

Safety: DEET is effective against mosquitoes, ticks, fleas, and chiggers and is a remarkably safe insect repellent. Only 30 cases of severe toxicity have been reported among billions of uses over 30 years. Most cases of toxic encephalopathy or seizures were reported in young children in whom excessive amounts were used over prolonged periods. No long-term information is available on the use of picaridin, but toxicity tests in animals have shown it to be extremely safe.

The following precautionary measures can minimize the possibility of adverse reactions to insect repellents containing DEET or picaridin:

- Use repellents according to label directions.
- Apply repellents sparingly and only to exposed skin.
- Repellents should not be inhaled or ingested, and contact with the eyes should be avoided.
- Avoid applying repellents to portions of children's hands that are likely to have contact with eyes or mouth.
- Never use repellents on wounds or irritated skin.
- Wash repellent-treated skin if no further risk exists of exposure to insects.
- Wash treated skin and seek medical attention if a suspected reaction to insect repellent occurs.

Use a pyrethroid-containing aerosol spray, vaporizer device, or smoldering coil in living and sleeping areas during evening and nighttime hours.

Permethrin is an insecticide licensed for use on clothing, bed nets, sleeping-bag liners, and outdoor gear to repel mosquitoes and biting flies and to kill (through contact toxicity) crawling arthropods, such as ticks, chigger mites, fleas, and lice. Permethrin is available as a spray or as a liquid for complete immersion of the fabric to be treated. Permethrin physically binds to fabric (cotton or 50% cotton/nylon blend), retaining repellency even after 50 washings. To maintain contact toxicity and maximum protection, consider retreating clothing every 6 weeks or after every sixth laundering. Clothing treated with permethrin only provides protection on the covered portion of the body; therefore, a repellent applied to exposed skin should also be used. Permethrin is poorly absorbed through the skin, although sunscreens and other products may increase the rate of skin absorption. Another pyrethroid, deltamethrin liquid, is available in some countries.

Rabies

Traveler Summary

Key Points

- Rabies is an acute, fatal, viral infection of the brain occurring worldwide, transmitted via saliva through penetrating bites, licks, or scratches or contact with infectious nervous tissue from infected dogs, bats, and other mammals.
- Risk is low for travelers but becomes significant after a potential bite exposure.
- Symptoms are initially mild and include tingling at the site of the bite, fever, muscle aches, anxiety, depression, irritability, and sometimes respiratory or gastrointestinal symptoms.
- Consequences of infection are paralysis and coma, which is always fatal once the rabies virus reaches the brain from the site of the bite or wound.
- Prevention includes avoiding any contact with dogs and other biting mammals (including bats and wildlife) in countries with a high risk of rabies.
- Rabies vaccine for prevention prior to any exposure or potential bite is given in 2 doses: 1 each on days 0 and 7; either a titer check (vaccine response test) at 1 to 3 years followed by a booster dose (if necessary) or, alternatively, an empiric booster (third dose; no laboratory testing) given 21 days to 3 years afterward is recommended. Following a potential rabies exposure, persons not previously vaccinated need 4 doses of vaccine (on days 0, 3, 7, and 14) plus rabies immune globulin on the first day (or within 7 days of the first dose of vaccine), whereas previously vaccinated persons need only vaccine (2 doses on days 0 and 3).
- Vaccine side effects are most commonly injection-site reactions and fever, headache, dizziness, insomnia, and abdominal pain.
- Duration of vaccine protection following a completed series is limited to the time interval until any subsequent rabies exposure, at which time postexposure vaccination will be required. Travelers do not require routine boosters.

Introduction

Rabies is an acute, progressive, and fatal viral infection of the brain and spinal cord, transmitted via saliva through penetrating bites, licks, or scratches, or via contact with infectious nervous tissue from rabid animals. Almost all rabies deaths are due to dog or bat bites. Tens of millions of human exposures and tens of thousands of deaths may occur globally each year due to rabies.

Risk Areas

Rabies is found on all continents except Antarctica; most deaths due to rabies occur in Africa and Asia. Canine rabies (responsible for about 99% of human cases) occurs in parts of Africa, Asia, and to a much lesser extent in Central and South America. Bat rabies occurs worldwide, except in Japan, New Zealand, and several islands where bats are not present.

In the US, bats that feed on insects (notably silver-haired bats) are the most common cause of human rabies cases. In Central and South America, rabies transmitted by vampire bats causes significant death in cattle and occasional outbreaks in humans. Rabies virus can also be found in coyotes, foxes, raccoons, and skunks in the US; in foxes in the Americas, Europe, and southern Africa; in mongooses on the Caribbean islands and in southern Africa; in kudu and jackals mainly in southern Africa; and in ferret badgers in northeast Asia.

From 1990 through 2019, most cases of rabies infection in international travelers were acquired in Asia, notably in India and the Philippines; Central America and the Caribbean islands, notably Mexico; and in North Africa, notably Morocco and Algeria.

Imported cases have also been reported in the US after international travel; most cases occurred after dog exposures although bat exposures were also identified. In the US, approximately 0 to 4 cases occur every year.

Transmission

Rabies is mainly transmitted to humans via saliva through penetrating bites of infected animals that may not exhibit features of the disease (especially carnivores and bats). Rabies virus is introduced through intact skin (e.g., by a bite or scratch) or licked onto preexisting nonintact skin or mucous tissue via saliva or contact with infected nervous tissue, where it then travels through the nerves to the brain. All mammals are susceptible, but dogs and other canines (foxes, wolves, jackals, and coyotes) are the most important vectors because they bite readily and may have daily contact with humans. Monkeys are a potential but uncertain source; nevertheless, monkey bites must be treated as a potential rabies risk. Bat rabies is transmitted by bat bites or scratches (which may not be noticed) or, more rarely, by inhalation of aerosolized bat saliva in caves where bats congregate. Bites from livestock, small and large rodents (beavers, gerbils, guinea pigs, hamsters, mice, rats, and woodchucks) and lagomorphs (hares, rabbits) do not usually transmit rabies. Rabies is not transmitted via exposure to blood, urine, or feces of infected animals and no human cases resulting from consumption of raw meat or raw milk from an infected animal have been reported. Human-to-human transmission has never been reported; rare routes of transmission include corneal grafting and tissue and organ transplantation.

Risk Factors

Risk is low for travelers and, although rare, rabies is a high-impact disease. Children are at higher risk because of their inquisitive nature, attraction to and inability to recognize behavioral signals from animals (especially dogs), small stature, and the possibility that they may not report an exposure. A bite, scratch, or lick from a dog or other mammal in a rabies-endemic country or a bite or scratch from a bat anywhere in the world presents a risk of rabies to an unvaccinated traveler.

Risk of developing rabies increases with severity (number and depth) of bites and proximity to the head. Vaccination is protective when given in a timely manner before and/or after exposure. Bites to the face carry an especially high risk and require more urgent initiation of treatment to neutralize the rabies virus before it reaches the brain.

Symptoms

Symptoms most commonly develop 20 to 60 days (but could occur 5 days to several years) after exposure (depending on the severity and site of the bite) and include tingling (at the site of the bite) followed by fever, headache, muscle aches, anxiety, depression, irritability, and sometimes respiratory or gastrointestinal symptoms.

Consequences of Infection

Patients with furious rabies, which is common after dog bites, are terrified of water and develop severe spasms of the breathing muscles, which may lead to suffocation, generalized convulsions, coma, and death (in approximately 5 days). Patients with paralytic rabies, which is common after bat bites, become lethargic, dribble saliva, and develop loss of muscle tone and paralysis (starting at the site of the bite or scratch), leading to coma and death in about 13 days.

Need for Medical Assistance

A traveler who has been bitten, scratched, or licked by a mammal in a rabies-endemic country or by a bat anywhere in the world should urgently seek medical advice on receiving a postexposure vaccination series. Any potential rabies exposure, even from months earlier, requires appropriate medical evaluation.

National, state, or local health authorities should be consulted by the traveler or medical provider for recent information on rabies risk according to the particular exposure.

Prevention

Nonvaccine

Preexposure

Travelers should:

- Avoid contact with all dogs (including puppies) in countries with canine rabies. Pets in some countries may not be vaccinated against rabies.
- Avoid contact with all animals, including wild mammals, free-roaming animals, and pets that are potential reservoirs (especially an animal that is behaving abnormally), in countries with rabies in wild mammals (e.g., mongooses, raccoons, or skunks).
- Avoid provoking domestic animals
- Avoid touching or feeding monkeys, especially those in temples and national parks, because they often show little fear of humans.
- Use protective measures to avoid bat exposure if planning to visit bat-infested caves.
- Be especially vigilant with children because they are at high risk for exposure and may not report bites, scratches, or other incidents that might occur.
- Avoid bringing animals home as pets; dogs and cats may be infected with rabies, but symptom onset may be delayed for several days or months.

Postexposure

Travelers should:

- Immediately cleanse all wounds thoroughly with copious amounts of soap and water (under a running tap if possible) for a minimum of 15 minutes and urgently seek care.
- Use a virucidal agent (such as povidone-iodine) if available to irrigate the wounds and destroy the virus.
- Have deep wounds explored, cleaned, and irrigated in a hospital (under an anesthetic if necessary) prior to wound closure or suturing.
- Check tetanus vaccination status and receive Tdap booster if indicated.

Vaccine and Rabies Immune Globulin

Preexposure

Rabies vaccine can be given before travel to travelers going to any country with rabies (especially canine rabies) to simplify the postexposure vaccine schedule (to only 2 doses) and eliminate the need for rabies immune globulin (RIG), which is often very difficult to obtain abroad. Preexposure vaccination may also provide some protection if postexposure vaccination after a bite is delayed or if an unapparent exposure to rabies occurs.

Preexposure prophylaxis (PrEP) is recommended for:

- Long-stay travelers (1 month or longer) going to high-risk destinations
- Travelers with likelihood of repeat travel to risk areas
- Shorter-stay travelers in high-risk destinations if more than 24 hours from a reliable source of modern cell-culture rabies vaccine and RIG
- Travelers with extensive outdoor exposure (occupational or adventure) in high-risk destinations where immediate access to appropriate medical care may be limited, regardless of length of stay
- Risk-averse travelers going to high-risk destinations, especially those engaging in high-risk activities

Postexposure

Vaccine *without* RIG is given to persons who have previously completed a primary PrEP series at any time.

Vaccine *with* RIG is given to persons without a complete PrEP series (2 doses of rabies vaccine; see below). Human rabies immune globulin (HRIG) provides rapid, passive, short-term immunity.

Postexposure prophylaxis (PEP), with or without RIG (depending on PrEP status; see below), is recommended for:

- Bite exposures that include any penetration of the skin by the teeth of a potentially rabid animal
- Nonbite exposures, including scratches or contamination of open wounds, abrasions, or mucous membranes with saliva from animal licks or other potentially infectious material
- Bat exposures (even if unsure whether exposure did or did not occur) from anywhere in the world (all bats should be considered potentially rabid)

PEP is not recommended for indirect contact and certain activities (e.g., petting or handling an animal, contact with blood, urine or feces, and contact of saliva with intact skin) because these do not constitute exposures.

Side Effects

The most common vaccine side effects are mild local reactions, which can include pain, redness, swelling, or itching at the injection site. Fever, headache, dizziness, abdominal pain, insomnia, and gastrointestinal symptoms may also occur. Neurological complications have been reported, albeit rarely.

Persons with underlying medical conditions or who have concerns about the vaccines should speak to their health care provider before vaccine administration.

Timing

Preexposure vaccination consists of 2 doses, 1 each on days 0 and 7. Either a titer check (vaccine response laboratory test) 1 to 3 years after series completion with a booster (third dose) given only if necessary) or, alternatively, an empiric booster (third dose; no laboratory testing) given 21 days to 3 years after series completion is recommended for travelers. Some authorities may consider persons who only received 2 PrEP doses (versus the previously authorized 3-dose series) as unimmunized for purposes of determining the following postexposure strategy.

Duration of vaccine protection is limited to the time interval until any subsequent rabies exposure, at which time postexposure vaccination will be required. Regular boosters are recommended only for persons at continuous or frequent risk (e.g., occupational exposures to rabies virus, animals, or bats), but not for travelers.

Postexposure vaccination, with or without RIG (depending on preexposure vaccination status; see below), is recommended for:

- *Persons who have received the complete preexposure vaccine series or a prior postexposure series:* Rabies vaccine only; 2 doses, 1 each on days 0 and 3.

Persons who have not received the complete preexposure vaccine series or a prior postexposure series: Rabies vaccine plus RIG; 4 doses of rabies vaccine, 1 each on days 0, 3, 7, and 14, plus 1 dose of RIG (within 7 days of the first vaccine dose; preferably on the first day of vaccine administration). RIG is injected into and around the bite or exposure site to ensure as much contact with areas of saliva contamination as possible. The remaining RIG is injected intramuscularly at a site distant from the wound. Persons with a weakened immune system should receive 5 doses of rabies vaccine plus RIG, but may be offered a titer check after the fourth dose to determine if additional doses (including the fifth dose) are necessary. Travelers in resource-limited situations where RIG may be unavailable may receive a fifth dose of vaccine on day 28. Preexposure and postexposure regimens can also be administered intradermally (ID), which differs from the more common route of intramuscular administration. Returned travelers may have been started on one of these ID regimens in the exposure country, but public health agencies in the traveler's home country may not recognize these regimens and may recommend restarting a full standard postexposure series.

Travelers' Diarrhea

Traveler Summary

Key Points

- Travelers' diarrhea (TD), the most common health problem for travelers, is an intestinal infection affecting up to 70% of travelers going to developing countries.
- Risk is higher for young adults, persons with underlying illnesses, and those taking medicines that decrease gastric acidity.
- Symptoms can vary from mild to severe and can include uncomfortable, crampy diarrhea with nausea or vomiting; fever sometimes occurs. Significant dehydration is uncommon in adults.
- Consequences of infection may include persistent diarrhea, recurrent diarrhea, and other chronic gastrointestinal discomfort.
- Prevention includes observing food and beverage precautions and hand hygiene (frequent, thorough handwashing) and treating water.
- No vaccine is available in the US, and preventive antibiotics are not recommended. A vaccine with limited effectiveness is available in some countries but is not recommended.

- Self-treatment includes fluid rehydration and antimotility or antisecretory agents. Travelers should reserve the use of antibiotics for severe diarrhea.

Introduction

TD is the most common health problem for travelers, affecting up to 70% of travelers going to some developing countries. TD is caused primarily by bacteria (uncommonly by parasites or viruses) acquired through consumption of contaminated food or beverages. TD is characterized by the sudden onset of abnormally loose or liquid stools, such that the illness is either tolerable, interferes with many planned activities, or is incapacitating and prevents all planned activities. TD is usually a self-limiting disease that resolves in 3 to 4 days, but strategies are available to self-treat and shorten the duration of symptoms.

Risk Areas

The traveler's destination is the most important determinant of risk. TD can be acquired whenever people from countries with a high level of hygiene travel to countries with a low level of hygiene. Developing countries in Africa, Asia, Latin America, and the Middle East are considered high risk. Most countries in southern Europe and a few Caribbean islands are deemed intermediate risk. Low-risk areas include Australia, Canada, northern Europe, Japan, New Zealand, the US, and several of the Caribbean islands.

Transmission

Poor sanitation, the presence of stool in the environment, and the absence of safe restaurant practices lead to risk of diarrhea from eating a variety of foods contaminated by fecal organisms, especially bacteria. Because travelers are usually careful to avoid drinking untreated water, many acquire TD from eating contaminated food. In long-stay travelers and expatriates who tend to eat adventurously for longer periods of time, parasites can account for 10% to 20% of diarrhea. Persons with a vomiting predominant illness, with or without diarrhea, may have a norovirus infection (especially if other close individuals have a similar illness) and are highly infectious for others sharing living quarters or bathroom facilities.

Risk Factors

Individuals at high risk for TD or adverse consequences include young adults (prone to risk-taking behavior and often on limited budgets); persons with compromised immunity, inflammatory bowel disease, or diabetes; and those taking medicines (e.g., omeprazole) that decrease gastric acidity.

Symptoms

TD caused by bacteria typically presents with abrupt onset of uncomfortable, crampy diarrhea and may be accompanied by nausea or vomiting and, less commonly, fever. TD caused by parasites is usually mild and begins gradually with loose stools occurring in distinct episodes during the day, slowly becoming more bothersome and associated with fatigue. Significant dehydration is uncommon in adults. Persons with protozoal infections often do not seek medical care for several weeks due to the generally mild nature of the symptoms.

Consequences of Infection

Persistent diarrhea, recurrent diarrhea, and other chronic gastrointestinal discomfort (e.g., bloating, gas, constipation) may occur as a result of TD. When diagnostic testing yields no other diagnoses, these chronic gastrointestinal symptoms may be attributed to "postinfectious irritable bowel syndrome."

Need for Medical Assistance

Persons who develop bloody stools or severe symptoms such as intense cramps, fever and chills, or severe thirst (with inability to keep liquids down) that do not rapidly improve with self-treatment should seek medical attention. Illnesses unresponsive to self-treatment will require specific investigation for possible protozoal causes.

Immediate medical care is imperative if an infant or child shows signs of severe dehydration, bloody diarrhea, fever higher than 38.5°C (101.5°F), or persistent vomiting.

Prevention

Food and Beverage Precautions

Guaranteeing the safety of food and beverages is difficult if not impossible when traveling, especially in developing countries. Nevertheless, travelers can continue to enjoy local foods, which is part of the pleasure of international travel; however, completely avoiding diarrhea in certain high-risk destinations may not be possible, even with the strictest adherence to preventive measures. Although some evidence exists to suggest that where food is eaten is more important than what food is eaten, observing food and beverage precautions helps minimize risk and decreases the number of organisms ingested and the severity of TD if contracted. These precautions also help reduce the risk of other infections, such as dysentery, hepatitis A and E, giardiasis, typhoid, and paratyphoid.

Developing countries don't always have the resources needed to ensure a pure water supply; consequently, tap water is not safe to drink because bacteria or parasites in food or water may go undetected. Even if the local population can drink the water, travelers should not assume that they can. Residents have built up some immunity to organisms in the water, but visitors have not.

No vaccine is available in the US, and preventive antibiotics are not recommended. A vaccine with limited effectiveness is available in some countries but is not recommended.

See the following articles: *Food and Beverage Precautions* and *Treating Water*.

Self-Diagnosis and Self-Treatment

The decision to self-treat depends on the severity of the functional disability caused by TD. Increased fluid intake is necessary to correct dehydration. Most cases will resolve with hydration and symptomatic treatment with antimotility or antisecretory agents (see Nonantibiotic Agents, under Drug Treatment). Adding antibiotics for moderate TD may shorten the duration or severity of illness. All severe TD cases should receive antibiotics.

Discuss self-treatment options with a health care provider to obtain appropriate medications for a personal medical kit for travel. A strategy for self-treatment of TD under different circumstances is shown in Table 1.

Table 1: Treatment Options by TD Severity	
Severity of Diarrhea	Recommended Treatment
<i>Mild:</i> loose or liquid stools (without body symptoms) that are tolerable, not distressing, and do not interfere with planned activities.	- Antibiotics are not recommended. - May use bismuth subsalicylate (BSS) or loperamide (for maximum of 48 hours) if necessary for comfort during sightseeing or travel and if not contraindicated.
<i>Moderate:</i> loose or liquid stools with cramps or nausea that interfere with planned activities.	- Antibiotic use not encouraged due to potential for inducing resistant bacteria. May consider empiric azithromycin. Quinolone antibiotics (ciprofloxacin, levofloxacin, ofloxacin) may be used if azithromycin is not carried or not available en route. Avoid quinolones for TD acquired in India and Southeast Asia. - May use loperamide (for a maximum of 48 hours) as monotherapy or together with antibiotics if necessary for comfort during sightseeing or travel and if not contraindicated.
<i>Severe:</i> loose or liquid stools with cramps or nausea that are incapacitating or prevent planned activities. All dysentery (blood or pus in the stools) is considered severe.	- Use empiric azithromycin - Stay in room and use toilet as necessary. - May use loperamide (for a maximum of 48 hours) if necessary for comfort, unless dysentery is present (blood or pus in the stools). - Pay attention to rehydration. - Seek medical attention if symptoms do not rapidly improve or if dysentery is present.

Fluid and Dietary Management

TD in adults is not typically associated with clinically significant dehydration, but replacement of fluids that are lost remains a cornerstone of self-treatment. Mild dehydration can be corrected with any fluid, and a patient should drink any available appropriate fluid until oral rehydration solution (ORS) is obtained. ORS is designed to be rapidly absorbed from the intestine, thus it can be useful even in the presence of vomiting. If an ORS is thought to be indicated, many stores and pharmacies in developing countries carry ORS packets. Travelers going to remote areas should carry their own ORS packets. If not hungry, the ill traveler should drink fluids and not force food. If hungry, eating is encouraged, but avoid alcohol, coffee, strong tea, spicy food, greasy food, and dairy products.

For treating dehydration in children, the following recommendations for use of ORS should be followed:

- Severe dehydration, bloody diarrhea, fever higher than 38.5°C (101.5°F), or persistent vomiting: Immediate medical care is imperative for infants and children.
- Mild to moderate dehydration: Give 60 to 120 mL (2-4 oz) of ORS for every loose stool or vomiting episode to an infant weighing less than 10 kg (22 lb), and give 120 to 240 mL (4-8 oz) to children weighing more than 10 kg.
- Recovery period: Introduce a normal diet as quickly as the child will accept it. Use of specific, restrictive, or liquid diets or withholding food is not necessary.

Drug Treatment

Nonantibiotic Agents

Loperamide (an antimotility drug), which is available over-the-counter, appears to be safer than diphenoxylate (Lomotil), a prescription medicine. Take 4 mg initially; if mild diarrhea continues, take an additional 2 mg every 6 hours, not to exceed 8 mg/day for over-the-counter use and 16 mg/day by prescription; the latter accounts for physician screening for patient contraindications. For children aged ≥ 2 years, loperamide may be dosed at 0.25 mg/kg/day when the modest benefit of a 1-day reduction in the duration of diarrhea is worth the slight risk of an adverse event. Taking higher than the recommended dose of loperamide can cause cardiac adverse events that may result in death in significant overdoses.

Antimotility agents sometimes induce prolonged constipation, even at low doses, and can lead to a bloated, uncomfortable feeling if taken for moderately severe infections without taking an antibiotic as well. Use of these agents should be discontinued if symptoms last more than 48 hours. Loperamide should not be taken by travelers with fever or with bloody stool. Antisecretory agents, such as bismuth subsalicylate (BSS; i.e., Pepto-Bismol and the US formulation of Kaopectate), can also improve some symptoms of TD.

Antibiotics

Travelers are often in areas where prompt, effective medical care is unavailable. Therefore, self-treatment of bacterial diarrhea with antibiotics prescribed and purchased prior to leaving for the trip may be more practical. The use of antibiotics can turn a 3- or 4-day illness into a 1-day illness. However, antibiotic use for TD increases the intestinal carriage of antibiotic-resistant bacteria in returning travelers, especially in South Asia where 80% of travelers treated with antibiotics acquired resistant bacteria. Antibiotic choice for the treatment of moderate (antibiotics discouraged) and severe TD in adults is shown in Table 2.

Table 2: Antibiotic Treatment for Severe and Moderate Bacterial TD in Adults ¹			
Causative Intestinal Organism	Antibiotic Prescription ²	Dose/Schedule	Primary Contraindications
Typical noninvasive bacterial causes of severe TD	Azithromycin 500 mg; 4 tablets	1,000 mg orally, single dose ^{3, 4}	Azithromycin allergy
		If symptomatic after 24 hr: continue with 500 mg orally, once per day for 2 more doses	
	Ciprofloxacin 500 mg; 6 tablets	750 mg single dose (1½ tablets)	Quinolone allergy; pregnancy; concomitant administration with tizanidine
		If symptomatic after 24 hr: continue with 500 mg orally, twice per day for 4 more doses	
1. For use when fluid rehydration and antimotility or antisecretory agents are insufficient and diarrhea is severe or moderate (per Table 1). Antibiotic use increases intestinal carriage of antibiotic-resistant bacteria in returning travelers; travelers should be encouraged to restrict the use of antibiotics to self-treatment of diarrhea that is severe. 2. Side effects Azithromycin: Those with heart problems or heart rhythm problems should only use azithromycin under the supervision of a physician. Quinolones (ciprofloxacin, levofloxacin, ofloxacin): At the first sign of tendon pain, swelling, or inflammation, the traveler should stop taking the quinolone, avoid exercise and use of the affected area, and seek medical assistance. Quinolones may cause photosensitivity reactions in the tropical sun. 3. Seek medical attention as soon as possible for bloody stools. If effective medical care or medical consultation is unavailable, self-treatment is recommended. Preferred regimen for dysentery (bloody diarrhea) is a full 3-day course with a 1,000 mg initial dose. 4. The 1,000 mg single dose (two 500 mg tablets) can be split into 2 separate doses over the first day to reduce side effects.			

Causative Intestinal Organism	Antibiotic Prescription ²	Dose/Schedule	Primary Contraindications
	Levofloxacin 500 mg; 3 tablets	500 mg orally, single dose	Quinolone allergy; pregnancy
		If symptomatic after 24 hr: continue with 500 mg orally, once per day for 2 more doses	
	Ofloxacin 400 mg; 6 tablets	400 mg orally, single dose	Quinolone allergy; pregnancy
		If symptomatic after 24 hr: continue with 400 mg orally, twice per day for 4 more doses	
Noninvasive <i>E. coli</i> that cause TD (includes ETEC, EPEC, EAEC)	Rifaximin 200 mg; 9 tablets	200 mg orally, 3 times per day for 3 days	Rifamycin (or component) allergy; pregnancy; adults 65 years and older (studies on safety in this age group have not been done)

1. For use when fluid rehydration and antimotility or antisecretory agents are insufficient and diarrhea is severe or moderate (per Table 1). Antibiotic use increases intestinal carriage of antibiotic-resistant bacteria in returning travelers; travelers should be encouraged to restrict the use of antibiotics to self-treatment of diarrhea that is severe.
2. Side effects

Azithromycin: Those with heart problems or heart rhythm problems should only use azithromycin under the supervision of a physician.

Quinolones (ciprofloxacin, levofloxacin, ofloxacin): At the first sign of tendon pain, swelling, or inflammation, the traveler should stop taking the quinolone, avoid exercise and use of the affected area, and seek medical assistance. Quinolones may cause photosensitivity reactions in the tropical sun.
3. Seek medical attention as soon as possible for bloody stools. If effective medical care or medical consultation is unavailable, self-treatment is recommended. Preferred regimen for dysentery (bloody diarrhea) is a full 3-day course with a 1,000 mg initial dose.
4. The 1,000 mg single dose (two 500 mg tablets) can be split into 2 separate doses over the first day to reduce side effects.

Antiparasitic Drugs

In general, patients should not carry these medicines for self-treatment. See a health care provider because a proper diagnosis for parasitic infection is necessary, and these medicines are administered under supervision. Travelers going to extremely remote locations or on long trips may be given tinidazole to carry on a case-by-case basis.

Travax content represents decision-relevant, expert synthesis of real-time data reconciled with new and existing available advice from authoritative national and international bodies. Recommendations may differ from those of individual countries' public health authorities. Travax country-specific recommendations pertain to healthy adult travelers. Guidance regarding pediatric and special needs travelers can be found under the relevant topic in the Travax Library.

© 2023 Shoreland, Inc. All rights reserved.